Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1-38 (withdrawn)

39. (cancelled)

40. (currently amended) ~~A well bore treatment fluid~~ The method according to claim ~~39~~ 67, wherein the precipitate is soluble to at least 5.0 wt % in hydrocarbons.

41. (currently amended) ~~A well bore treatment fluid~~ The method according to claim 40, wherein the precipitate is soluble to at least 10.0 wt % in hydrocarbons.

42. (currently amended) ~~A well bore treatment fluid~~ The method according to claim ~~39~~ 67, wherein the precipitate is less than 1.0 wt % soluble in water.

43. (currently amended) ~~A well bore treatment fluid~~ The method according to claim 42, wherein the precipitate is less than 0.10 wt % soluble in water.

44. (currently amended) ~~A well bore treatment fluid~~ The method according to claim ~~39~~ 67, wherein the melting point of the precipitate is over 50°C.

45. (currently amended) ~~A well bore treatment fluid~~ The method according to claim 44, wherein the melting point of the precipitate is over 100°C.

46-49. (cancelled).

50. (currently amended) ~~A well bore treatment fluid~~ The method according to claim ~~39~~ 67, wherein the precipitate is a divalent or trivalent metal salt of an α-branched carboxylic acid.

51. (currently amended) ~~A well bore treatment fluid~~ The method according to claim 50, wherein the precipitate has the structure:

$(R_1COO^-)_nM^{n+}$

wherein:

R_1 is a C_{30}-C_5 aliphatic group having a C_{20}-C_4 linear chain bonded at a terminal carbon atom thereof (the α carbon atom) to the carbon atom of the carboxyl (COO) group, and further having at least one C_1, C_2 or C_3 side group bonded to said terminal carbon atom, and

M is a divalent or trivalent metal cation.

52. (currently amended) ~~A well bore treatment fluid~~ The method according to claim 51, wherein two of said side groups are bonded to said terminal carbon atom.

53. (currently amended) ~~A well bore treatment fluid~~ The method according to claim 13, wherein the precipitate has the structure:

$(R_2COO^-)_nM^{n+}$

wherein:

R_2 is a C_{10}-C_{30} cyclyl group bonded at a carbon atom thereof (the α carbon atom) to the carbon atom of the carboxyl (COO) group, and having at least one C_1, C_2 or C_3 side group bonded to the α carbon atom, and

M is a divalent or trivalent metal cation.

54. (currently amended) ~~A well bore treatment fluid~~ The method according to claim 53, wherein R_2COO^- is an abietate group.

55. (currently amended) ~~A well bore treatment fluid~~ The method according to claim ~~39~~ 67, wherein the compound is immiscible in a solvent fully miscible with water.

56. (currently amended) ~~A well bore treatment fluid~~ The method according to claim ~~39~~ 67, wherein the α-branched carboxylic acid is abietic acid.

57. (currently amended) ~~A well bore treatment fluid~~ The method according to claim 56, wherein the precipitate is a divalent or trivalent metal salt of abietic acid.

58. (currently amended) ~~A well bore treatment fluid~~ The method according to claim 56, wherein the precipitate is polymerised abietic acid.

59. (currently amended) ~~A well bore treatment fluid~~ The method according to claim 56, wherein the precipitate is a divalent or trivalent metal salt of polymerised abietic acid.

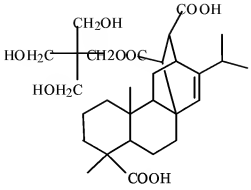
60. (currently amended) ~~A well bore treatment fluid~~ The method according to claim 56, wherein the precipitate is a phenolic co-polymer of abietic acid.

61. (currently amended) ~~A well bore treatment fluid~~ The method according to claim ~~39~~ 67, wherein the dissolved compound is a divalent or trivalent metal salt.

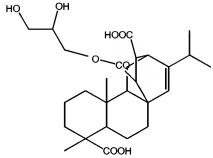
62. (currently amended) ~~A well bore treatment fluid~~ The method according to claim 61, wherein the divalent metal is selected from the group consisting of calcium, magnesium and zinc.

63. (currently amended) ~~A well bore treatment fluid~~ The method according claim ~~39~~ 67, wherein said dissolved compound is a precursor, the precursor being degradable to form the carboxylate anion of a divalent or trivalent metal salt.

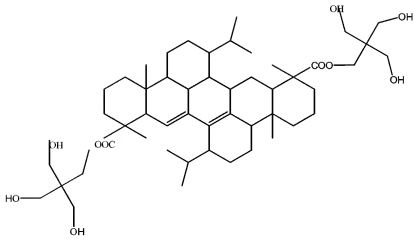
64. (currently amended) ~~A well bore treatment fluid~~ The method according to claim ~~39~~ 67, wherein the precipitate has the structure:



65. (currently amended) ~~A well bore treatment fluid~~ The method according to claim ~~39~~ 67, wherein the precipitate has the structure:



66. (currently amended) ~~A well bore treatment fluid~~ The method according to claim ~~39~~ 67, wherein the precipitate has the structure:



67. (currently amended) A method of reducing the outflow of water during recovery of hydrocarbons from a hydrocarbon reservoir in a formation, comprising:

(a) providing a non-aqueous well bore treatment fluid based on a liquid selected from oil or a mixture of oil and solvent such that said treatment fluid is not fully miscible with water, said treatment fluid containing 5 to 40 weight per cent of a water-immiscible dissolved compound based on α-branched carboxylic acid, derivatives or co-polymers thereof, and capable of forming a precipitate that is ~~substantially~~ soluble in hydrocarbons and ~~substantially~~ insoluble in water, and

(b) injecting said non-aqueous treatment fluid into a well bore; and

(c) letting the non-aqueous fluid permeate formation surrounding the well bore

(d) causing or allowing water or brine to mix with the non-aqueous fluid within the formation, to form a said precipitate therein and reduce the outflow of water therefrom.

68. (previously presented)A method according to claim 67, further comprising the step of injecting acid into the well bore.

69. (previously presented)A method according to claim 67, further comprising the step of delaying precipitation.

70. (previously presented)A method according to claim 69, wherein precipitation is delayed by injecting a spacer fluid into the formation before the treatment fluid.

71. (previously presented)A method according to claim 67, further comprising the step of injecting water or brine into the formation.

72. (previously presented)A method according to claim 67, further comprising the step of reversing flow direction in the well bore to resume hydrocarbon production.

73. (currently amended) A method of reducing the outflow of water during recovery of hydrocarbons from a hydrocarbon reservoir in a formation, comprising:

(a) providing a non-aqueous well bore treatment fluid based on a liquid selected from oil or a mixture of oil and solvent such that said treatment fluid is not fully miscible with water, said treatment fluid containing 5 to 40 weight per cent of a water-immiscible dissolved compound based on α-branched carboxylic acid, derivatives or co-polymers thereof, and capable of forming a precipitate that is ~~substantially~~ soluble in hydrocarbons and ~~substantially~~ insoluble in water, and

(b) injecting said non-aqueous treatment fluid into a well bore;

(c) injecting water or brine into the wellbore; and

(d) letting the non-aqueous treatment fluid permeate a formation surrounding the well bore to form precipitate ~~precipitates~~ in the presence of water or brine in the formation or the injected water or brine to reduce the outflow of water from the formation.

74. (new) The method of claim 67 wherein the well bore treatment fluid is oil-based.

75. (new) The method of claim 67 wherein the well bore treatment fluid is based on a mixture of solvent and oil.

76. (new) The method of claim 67 further comprising a step of injecting a spacer fluid without said water-immiscible dissolved compound into the formation before the treatment fluid.

77. (new) The method of claim 73 further comprising a step of injecting a spacer fluid without said water-immiscible dissolved compound into the formation before the treatment fluid.

78 (new) The method of claim 76 wherein the spacer fluid is selected from oil or a mixture of oil and solvent such that said spacer fluid is not fully miscible with water.

79 (new) The method of claim 67 wherein said reservoir comprises a plurality of oil-producing layers.